Corbett maths

Standard Form

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Examples

Workout

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Question 1: Write each of the following numbers in standard form.

(a) 40000 (b) 2000000 (c) 8000000 (d) 7000

(e) 100000000 (f) 900 (g) 250000 (h) 1900

(i) 54000000 (j) 11000000 (k) 89000 (l) 3600000000

(m) 43500 (n) 91900000 (o) 1230000000 (p) 71120

(q) 9804000 (r) 471500 (s) 55403 (t) 2936000

(u) 93508000 (v) 333810000 (w) 9800200000 (x) 49300

(y) 804000 (z) 69702000000

Question 2: Write each of the following as ordinary numbers

(a) 3×10^4 (b) 9×10^3 (c) 6×10^6 (d) 2×10^{10}

(e) 5×10^7 (f) 1.2×10^2 (g) 2.9×10^5 (h) 8.4×10^8

(i) 7.7×10^4 (j) 3.51×10^5 (k) 9.89×10^7 (l) 1.27×10^9

(m) 4.05×10^6 (n) 1.616×10^5 (o) 2.0651×10^3 (p) 8.829×10^7

(q) 1.0051×10^6 (r) 2.143578×10^4

Question 3: Write each of the following numbers in standard form.

(a) 0.002 (b) 0.0005 (c) 0.9 (d) 0.00000004

(e) 0.00065 (f) 0.0022 (g) 0.0361 (h) 0.000558

(i) 0.00000423 (j) 0.0000000981 (k) 0.00407 (l) 0.02052

(m) 0.0000515 (n) 0.006015 (o) 0.0000000082 (p) 0.00007005

(q) 0.000000024 (r) 0.00000000000005

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Question 4: Write each of the following as ordinary numbers

(a) 2×10^{-3} (b) 7×10^{-2} (c) 3×10^{-6} (d) 9×10^{-8}

(e) 4.8×10^{-4} (f) 6.7×10^{-3} (g) 9.2×10^{-6} (h) 4.1×10^{-2}

(i) 3.16×10^{-5} (j) 8.62×10^{-4} (k) 7.09×10^{-6} (l) 5.71×10^{-3}

(m) 2.05×10^{-8} (n) 4.112×10^{-2} (o) 1.651×10^{-3} (p) 2.0019×10^{-7}

Question 5: Write these numbers in standard form

(a) one million (b) nine thousand (c) forty thousand (d) nine billion

(e) 500^2 (f) 200^3 (g) $30{,}000^2$ (h) two thousandths

Question 6: Write each of these numbers in standard form

(a) 72×10^3 (b) 84×10^6 (c) 500×10^2 (d) 210×10^4

(e) 0.8×10^7 (f) 0.46×10^5 (g) 0.06×10^8 (h) 0.007×10^{12}

(i) 3000×10^{14} (j) 24×10^{-5} (k) 0.8×10^{-10} (l) 0.0055×10^{-2}

(m) 0.0372×10^{-9} (n) 65213×10^{-7} (o) 2933×10^{21} (p) 759300×10^{-1}

Question 7: Work out the answers to the following multiplications.
You may not use a calculator.

(a) $2 \times 10^3 \times 3 \times 10^4$ (b) $(4 \times 10^8) \times (2 \times 10^5)$ (c) $1.2 \times 10^4 \times 6 \times 10^4$

(d) $(3 \times 10^{-9}) \times (3 \times 10^3)$ (e) $4 \times 10^{-7} \times 3 \times 10^{-2}$ (f) $6 \times 10^{10} \times 4 \times 10^8$

(g) $7 \times 10^{12} \times 8 \times 10^{-9}$ (h) $3.7 \times 10^5 \times 5 \times 10^6$ (i) $(8 \times 10^3) \times (5 \times 10^5)$

(j) $5 \times 10^{-14} \times 4 \times 10^{-7}$ (k) $1.8 \times 10^2 \times 2 \times 10^{-8}$ (l) $5.8 \times 10^6 \times 4 \times 10^7$

(m) $4.5 \times 10^{20} \times 9 \times 10^{-14}$ (n) $(1.1 \times 10^{-5}) \times (1.2 \times 10^{-2})$ (o) $6.2 \times 10^4 \times 7 \times 10^9$

(p) $2.8 \times 10^8 \times 1.3 \times 10^7$ (q) $1.25 \times 10^{-16} \times 3.2 \times 10^{10}$ (r) $8.7 \times 10^2 \times 9.2 \times 10^6$

(s) $2 \times 10^2 \times 3 \times 10^7 \times 6 \times 10^4$ (t) $3 \times 10^6 \times 2.1 \times 10^{-8} \times 5 \times 10^{12}$

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Question 8: Work out the answers to the following divisions.
You may not use a calculator.

(a) $(8 \times 10^5) \div (2 \times 10^3)$ (b) $(9 \times 10^9) \div (3 \times 10^4)$ (c) $(5 \times 10^6) \div (2 \times 10^2)$

(d) $(9 \times 10^9) \div (4 \times 10^9)$ (e) $(1.2 \times 10^4) \div (3 \times 10^8)$ (f) $(3.5 \times 10^2) \div (5 \times 10^9)$

(g) $(4.8 \times 10^{15}) \div (3 \times 10^4)$ (h) $(6.4 \times 10^3) \div (8 \times 10^{16})$ (i) $(2.7 \times 10^{-3}) \div (9 \times 10^7)$

(j) $(1.44 \times 10^8) \div (12 \times 10^{-5})$ (k) $(2 \times 10^{10}) \div (5 \times 10^{-2})$ (l) $(1 \times 10^{-5}) \div (4 \times 10^{-2})$

(m) $(5 \times 10^{-6}) \div (8 \times 10^{-14})$ (n) $(8.1 \times 10^{-9}) \div (2.7 \times 10^3)$ (o) $(1.6 \times 10^7) \div (8 \times 10^2)$

(p) $(3 \times 10^{22}) \div (8 \times 10^9)$ (q) $(3.92 \times 10^8) \div (1.4 \times 10^{-6})$ (r) $(3 \times 10^{-4}) \div (1.2 \times 10^7)$

Question 9: Work out the answers to the following.
You may not use a calculator.

(a) $(3 \times 10^3)^2$ (b) $(2 \times 10^6)^2$ (c) $(5 \times 10^4)^2$ (d) $(8 \times 10^5)^2$

(e) $(9 \times 10^{10})^2$ (f) $(6 \times 10^{-3})^2$ (g) $(2.5 \times 10^{-6})^2$ (h) $(1.2 \times 10^8)^2$

(i) $(2 \times 10^5)^3$ (j) $(4 \times 10^9)^3$ (k) $(3 \times 10^{15})^3$ (l) $(5 \times 10^{-7})^3$

(m) $(2 \times 10^6)^4$ (n) $(1 \times 10^{-4})^6$ (o) $(8.3 \times 10^{-2})^2$ (p) $(9.7 \times 10^3)^2$

Question 10: Work out each of the following

(a) $5 \times 10^4 + 3 \times 10^4$ (b) $4 \times 10^3 - 2 \times 10^3$ (c) $2.5 \times 10^5 + 3.3 \times 10^5$

(d) $7 \times 10^{-2} + 2 \times 10^{-2}$ (e) $6 \times 10^3 + 8 \times 10^2$ (f) $2 \times 10^6 - 8 \times 10^5$

(g) $2.6 \times 10^8 + 4.5 \times 10^9$ (h) $5.12 \times 10^5 - 1.89 \times 10^4$ (i) $(8 \times 10^7) + (3 \times 10^5)$

(j) $5.07 \times 10^{10} + 2.77 \times 10^9$ (k) $6.12 \times 10^{-3} - 1.07 \times 10^{-2}$ (l) $4 \times 10^{-7} + 9 \times 10^{-5}$

(m) $3.44 \times 10^8 + 7.03 \times 10^6 + 9.89 \times 10^7$

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Question 11: Using a calculator, work out the following

(a) $3.57 \times 10^3 \times 6.7 \times 10^7$

(b) $9.5 \times 10^4 + 3.8 \times 10^5$

(c) $1.8 \times 10^9 \times 5.2 \times 10^9$

(d) $7 \times 10^{-8} \times 2 \times 10^{-6}$

(e) $(7.71 \times 10^{15}) \div (6 \times 10^4)$

(f) $(8 \times 10^9)^3$

(g) $(5 \times 10^{-7})^{-3}$

(h) $2.55 \times 10^7 \times 8.02 \times 10^4 \times 1.1 \times 10^5$

Apply

Question 1: The distance between London and New York is 5,567,000 metres.
Write this number in standard form.

Question 2: The distance from the Sun to Pluto is 3.67 billion miles.
Write this number in standard form.



Question 3: The length of a cell is 0.016 mm
Write this number in standard form.

Question 4: The population of a country is 6.51×10^5
Write the population of the country as an ordinary number.

Question 5: 32,010 people attend a football match between West Ham and Southampton.
Write this number in standard form.



Question 6: There are approximately 5×10^4 grains of rice in a one kilogram bag of rice.
Approximately how many grains of rice will be in 20 one kilogram bags of rice?

Question 7: A penny weighs 0.0036kg.
Find the total mass of £400 worth of pennies.

Question 8: $A = 6 \times 10^5$ $B = 30000$ $C = 5 \times 10^{-2}$

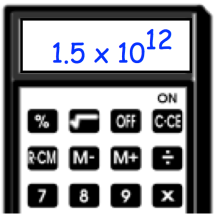
(a) Work out AB

(b) Work out C^2

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Question 9: The population of the United Kingdom in 1950 was 5.06×10^7
The population of the United Kingdom in 2015 was 6.47×10^7
Work out how many more people live in the United Kingdom in 2015 than 1950.
Give your answer as an ordinary number.

Question 10: Peter has multiplied two numbers using his calculator.
The calculator shows the answer.
He can remember that one number was 5000.
What was the other number used in the multiplication?



Question 11: An asteroid travels at 25 kilometres per second.
How far does it travel in one hour?
Give your answer in standard form.

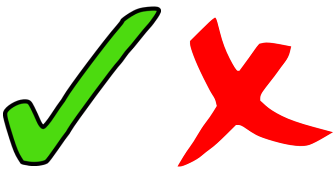
Question 12: Without using a calculator, work out.

$$\sqrt{4.9 \times 10^{11}}$$

Question 13: The mass of Earth is 5.97×10^{24}
The mass of Jupiter is 1.898×10^{27}
Using a calculator, work out how many times heavier Jupiter is than Earth.
Give your answer to one decimal place.

Question 14: The density of Nitrogen is 1.25×10^{-6} kg/cm^3
Calculate the mass of one cubic metre of Nitrogen.

Answers



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